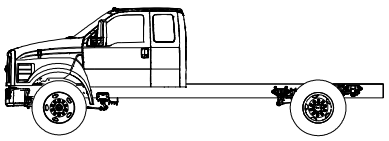
DO NOT DESTROY: THIS MANUAL IS REQUIRED BY LAW. KEEP UNTIL THE VEHICLE IS COMPLETED BY THE FINAL STAGE MANUFACTURER.

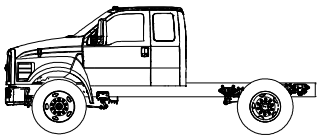
2018
MEDIUM TRUCK
INCOMPLETE VEHICLE MANUAL

Incomplete Vehicle Types For This Manual

MEDIUM TRUCK CHASSIS CAB



MEDIUM TRUCK TRACTOR CAB



February, 2017
▽ JC44-19A268-AA

U.S. & CANADIAN MOTOR VEHICLE SAFETY STANDARDS
(Application By Vehicle Type)

Standard Number	Title of Standard	Vehicle Type		Equipment (1)
		Truck	Truck Tractor	
101	Controls and Displays	X	X	
102	Transmission Shift Lever Sequence, Starter Interlock and Transmission Braking Effect	X	X	
103	Windshield Defrosting and Defogging Systems	X	X	
104	Windshield Wiping and Washing Systems	X	X	
105	Hydraulic and Electric Brake Systems	X	X	
106	Brake Hoses	X	X	X
108	Lamps, Reflective Devices and Associated Equipment	X	X	X
111	Rear Visibility	X	X	
113	Hood Latch System	X	X	
115	Vehicle Identification Number (Canada only)	X	X	
116	Motor Vehicle Brake Fluids	X	X	X
119 (2)	New Pneumatic Tires for Motor Vehicles with a GVWR of More Than 4,536 Kilograms (10,000 pounds) and Motorcycles			X
120	Tire Selection and Rims and Motor Home / Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of More Than 4,356 Kilograms (10,000 Pounds)	X	X	X
121	Air Brake Systems	X	X	X
124	Accelerator Control Systems	X	X	
205	Glazing Materials	X	X	X
207	Seating Systems	X	X	
208	Occupant Crash Protection	X(3)	X(3)	X
209	Seat Belt Assemblies	X	X	X
210	Seat Belt Assembly Anchorages	X	X	X
213	Child Restraint Systems (U.S. only)	X	X	X
213.4	Built-In Restraint Systems and Built-In Booster Seats (Canada only)	X	X	
217	Bus Emergency Exits and Window Retention and Release	X		
301.1	LPG Fuel System Integrity (Canada only)	X	X	
301.2	CNG Fuel System Integrity (Canada only)	X	X	
302	Flammability of Interior Materials	X	X	
304	Compressed Natural Gas Fuel Container Integrity (U.S. only)	X	X	
403	Platform Lift Systems for Motor Vehicles			X
404	Platform Lift Installations in Motor Vehicles	X	X	
PART 393.67	Parts and Accessories Necessary for Safe Operation – Liquid Fuel Tanks	X	X	X
PART 565 / 565.13	Vehicle Identification Number (VIN) Requirements (U.S. only)	X	X	
PART 567	Certification (Label Content & Location)	X	X	
1106	Noise Emissions (Canada only)	X	X	

(1) This column identifies Standards that have equipment/component requirements.

(2) Canadian 119 requirements are found in the Motor Vehicle Tire Safety Standards.

(3) Injury criteria are applicable to vehicles with a GVWR of 3856 kg [8500 lb] or less and an unloaded vehicle weight (UVW) of 2495 kg [5500 lb] or less except, in the United States, walk-in van-type trucks and vehicles designed to be sold exclusively to the U.S. Postal Service and, in Canada, vehicles manufactured for operation by persons with disabilities.

INTRODUCTION

Information in this manual is furnished pursuant to United States and Canadian safety regulations or, in some cases where the information is not required by regulation, is furnished for the convenience of intermediate or final stage vehicle manufacturers. Incomplete vehicles manufactured for sale or importation into the United States are specially equipped for the United States. The descriptions and statements contained in the manual relate only to motor vehicle safety standards issued under the National Traffic and Motor Vehicle Safety Act of 1966 as amended.

An incomplete vehicle manufactured for sale or importation into Canada is specially equipped for Canada. This vehicle conforms to the applicable Canadian Motor Vehicle Safety Standards (CMVSS) on the date of manufacture printed on the cover of this manual. Requirements unique to vehicles for use in Canada are identified in the “Statements of Conformity” and the “Canadian Vehicles” sections of this manual.

The “Emission Certification Information” section of this manual contains information regarding conformity to exhaust emission regulations of the United States, Canada, and the State of California and fuel economy regulations of the United States.

This manual should not be relied upon with respect to compliance with any regulation of the Federal Highway Administration or regulations issued pursuant to the Occupational Safety and Health Act (OSHA) or any other Federal, state, provincial or local regulations governing the performance or construction of motor vehicles (except for those requirements shown in the “Emissions Certification Information” section of this manual under the headings “Unleaded Gasoline Label,” “Warranty and Maintenance,” and “Emission Control Information Label”). It is the responsibility of the final stage manufacturer to determine applicability and comply with any Federal, state, or local requirements not detailed in this manual.

IMPORTANT:

UNITED STATES VEHICLES

Ford Motor Company has endeavored, whenever possible, to state the specific conditions under which an incomplete vehicle may be completed to conform to each applicable Federal Motor Vehicle Safety Standard. These specific statements are intended to aid subsequent stage manufacturers in avoiding instances of inadvertent noncompliance to particular standards.

Note that the final responsibility for the compliance of the completed vehicle rests with the final stage manufacturer who is required by law to certify, as prescribed by Title 49, Code of Federal Regulations, Part 567.5, that the completed vehicle conforms to all applicable Federal Motor Vehicle Safety Standards and all applicable federal, state and California emission/noise standards.

Ford Motor Company does not make any representation as to the appropriateness of modifications for any particular application other than expressly stated herein. Intermediate and final stage manufacturers must exercise proper engineering judgment to determine if a modification is appropriate for their specific application.

IMPORTANT:

UNITED STATES AND CANADIAN VEHICLES

Alterations to an incomplete vehicle by someone other than Ford Motor Company, or damage in transit, may affect compliance statements that are furnished in this manual, or representations that are printed on the label that may be affixed to a vehicle.

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DEFINITIONS

The following definitions are from Title 49, Code of Federal Regulations (49CFR), Parts 567.3, 568.3 and 571.3 where noted. Canadian definitions are from Canadian Motor Vehicle Safety Regulations (CMVSR), Section 2(1), and are in italics. Ford Motor Company definitions are for the purpose of this manual only. Some terms are followed by an abbreviation that is used throughout this manual.

Ambulance – is a vehicle for emergency medical care which provides: A driver's compartment; a patient compartment to accommodate an Emergency Medical Technician (EMT), Paramedic, and two litter patients (one patient on the primary cot and secondary patient on folding litter located on the squad bench) so positioned that the primary patient can be given intensive life-support during transit; equipment and supplies for emergency care at the scene as well as during transport; two-way radio communication; and, when necessary, equipment for light rescue/extrication procedures. The Ambulance shall be designed and constructed to afford safety, comfort, and avoid aggravation of the patient's injury or illness. (From Federal Specification KKK-A-1822-F). Ford Motor Company also includes within its definition of ambulance any vehicle that is used for transporting life-support equipment, for rescue operations, or for non-emergency patient transfer if the engine of the vehicle is equipped with a "throttle kicker" device, which enables an operator to increase engine speed over normal idle speed when the vehicle is not moving. (Ford Motor Company)

B-Pillar – is the vehicle body structure located directly rearward of each front door. This structure will include the outer panel, all inner panels or reinforcements which support the door opening, the door latching system, and/or the roof structure. (Ford Motor Company)

Basic (Stripped) Chassis – an incomplete vehicle, without occupant compartment, that requires the addition of an occupant compartment and cargo-carrying, work performing, or load-bearing components to perform its intended function. (Ford Motor Company)

Bus – a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons. (49CFR571.3)

Bus *(Canada) – a vehicle having a designated seating capacity of more than 10, but does not include a trailer or a vehicle imported temporarily for special purposes. (autobus)*

Chassis Cab – an incomplete vehicle, with completed occupant compartment, that requires only the addition of cargo-carrying, work performing, or load-bearing components to perform its intended functions. (49CFR567.3)

Completed Vehicle – a vehicle that requires no further manufacturing operations to perform its intended function. (49CFR567.3)

Critical Control Item – is a component or procedure which may affect compliance with a Federal regulation or, which could directly affect the safe operation of the vehicle. The identifying symbol is an inverted delta (▽). (Ford Motor Company)

Cutaway Chassis – an incomplete vehicle that has the back of the cab cut out for the intended installation of a structure that permits access from the driver's area to the back of the completed vehicle. (Ford Motor Company)

Cutaway Chassis *(Canada) – an incomplete vehicle that has the back of the cab cut out for the intended installation of a structure that permits access from the driver's area to the back of the vehicle. (châssis tronqué)*

Designated Seating Position – means a seat location that has a seating surface width, as described in §571.10(c) of this part, of at least 330 mm (13 inches). The number of designated seating positions at a seat location is determined according to the procedure set forth in §571.10(b) of this part. However, for trucks and multipurpose passenger vehicles with a gross vehicle weight rating greater than 10,000 lbs, police vehicles as defined in S7 of FMVSS 208, firefighting vehicles, ambulances, and motor homes, a seating location that is labeled in accordance with S4.4 of FMVSS 207 will not be considered a designated seating position. For the sole purpose of determining the classification of any vehicle sold or introduced into interstate commerce for purposes that include carrying students to and from school or related events, any location in such a vehicle intended for securement of an occupied wheelchair during vehicle operation is regarded as four designated seating positions. (49CFR571.3)

Designated Seating Position *(Canada) – means a location in a vehicle that is likely to be used as a seating position and that has a seating surface width of at least 330 mm; (place assise désignée)*

Final-Stage Manufacturer – a person who [company that (CMVSR)] performs such manufacturing operations on an incomplete vehicle that it becomes a completed vehicle. (49CFR567.3)

Gross Axle Weight Rating (GAWR) – the value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces. (49CFR571.3)

Gross Combination Weight Rating (GCWR) – the value specified by the manufacturer as the loaded weight of a combination vehicle. (49CFR571.3)

Gross Vehicle Weight Rating (GVWR) – the value specified by the manufacturer as the loaded weight of a single vehicle. (49CFR571.3)

H-Point – the mechanically hinged hip point of a manikin which simulates the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikins For Use in Defining Vehicle Seating Accommodations," November 1962. (49CFR571.3)

H-point *(Canada) – the mechanically hinged hip point of a manikin that simulates the actual pivot centre of the human torso and thigh, described in SAE Standard J826 APR80, Devices for Use in Defining and Measuring Vehicle Seating Accommodation. (point H)*

Incomplete Vehicle – an assemblage consisting, at a minimum, of chassis (including the frame) structure, power train, steering system, suspension system, and braking system, in the state that those systems are to be part of the completed vehicle, but requires further manufacturing operations to become a completed vehicle. (49CFR567.3)

(Cont'd next page)

(Continued)

Incomplete Vehicle *(Canada) – a vehicle (a) other than a vehicle imported temporarily for special purposes, that is capable of being driven and that consists, at a minimum, of a chassis structure, power train, steering system, suspension system and braking system in the state in which those systems are to be part of the completed vehicle, but requires further manufacturing operations to become a completed vehicle or (b) that is an incomplete trailer. (véhicule incomplet)*

Incomplete Vehicle Manufacturer – a person [company that (CMVSR)] who manufactures an incomplete vehicle by assembling components none of which, taken separately, constitute an incomplete vehicle. (49CFR567.3)

Intermediate Manufacturer – a person [company (CMVSR)], other than the incomplete vehicle manufacturer or the final stage manufacturer, who [that (CMVSR)] performs manufacturing operations on a vehicle manufactured in two or more stages. (49CFR567.3)

Motor Home – a multi-purpose vehicle with motive power that is designed to provide temporary residential accommodations, as evidenced by the presence of at least four of the following facilities: cooking; refrigeration or ice box; self-contained toilet; heating and/or air conditioning [system that can function independently of the vehicle engine (CMVSR)]; a potable water supply system including a faucet and a sink; and a separate 110-125 volt electrical power supply and/or an LP gas supply. (49CFR571.3)

Multifunction School Activity Bus (MFSAB) – a school bus whose purposes do not include transporting students to and from home or school bus stops. (49CFR571.3)

Multipurpose Passenger Vehicle (MPV) – a motor vehicle with motive power, except a low-speed vehicle or trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation. (49CFR571.3)

Multipurpose Passenger Vehicle (MPV) *(Canada) – a vehicle having a designated seating capacity of 10 or less that is constructed either on a truck-chassis or with special features for occasional off-road operation, but does not include an air cushion vehicle, an all-terrain vehicle, a golf cart, a low-speed vehicle, a passenger car, a three-wheeled vehicle, a truck or a vehicle imported temporarily for special purposes. (véhicule de tourisme à usages multiples)*

School Bus – a bus that is sold, or introduced in interstate commerce, for purposes that include carrying students to and from school or related events, but does not include a bus designed and sold for operation as a common carrier in urban transportation. (49CFR571.3)

School Bus *(Canada) – a bus designed or equipped primarily to carry students to and from school. (autobus scolaire)*

Seating Reference Point – the unique design H-point, as defined in SAE J1100 (June 1984), which:

(a) establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle,

(b) has X, Y, and Z coordinates established relative to the designed vehicle structure,

(c) simulates the position of the pivot center of the human torso and thigh, and

(d) is the reference point employed to position the two-dimensional drafting template described in SAE J826 (May 1987).

(abbreviated by Ford Motor Company)

Seating Reference Point *(Canada) – the unique Design H-point, as defined in section 2.2.11.1 of SAE Recommended Practice J1100 (June 1993), that:*

(a) establishes the rearmost normal design driving or riding position of each designated seating position, taking into account all modes of adjustment – horizontal, vertical and tilt – in a vehicle,

(b) has X, Y and Z coordinates, as defined in section 2.2.3 of SAE Recommended Practice J1100 (June 1993), established relative to the designed vehicle structure,

(c) simulates the position of the pivot centre of the human torso and thigh, and

(d) is the reference point employed to position the H-point template with the 95th percentile leg, as described in section 3.1 of SAE Standard J826 (June 1992), or, if that drafting template cannot be positioned, the reference point when the seat is in its rearmost adjustment position. (point de référence de position assise)

Second Unit Body (SUB) – consists of the body structure and/or all the cargo carrying, work performing, and/or load bearing components and/or equipment installed by a subsequent stage manufacturer on an incomplete vehicle, such that the incomplete vehicle becomes a completed vehicle. (Ford Motor Company)

Subsequent Stage Manufacturer – a term which means either intermediate or final stage manufacturers or both. (Ford Motor Company)

Trimmed Seat – a complete functional seat assembly including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding, all attaching hardware, and the final trim material (i.e., cloth, leather, or vinyl). (Ford Motor Company)

Truck – a motor vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment. (49CFR571.3)

Truck *(Canada) – a vehicle designed primarily for the transportation of property or special-purpose equipment but does not include a competition vehicle, a crawler-mounted vehicle, a trailer, a work vehicle, a vehicle imported temporarily for special purposes or a vehicle designed for operation exclusively off-road. (camion)*

Truck Tractor – a truck designed primarily for drawing other motor vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and the load so drawn. (49CFR571.3)

Unloaded Vehicle Weight (UVW) – the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo, occupants, or accessories that are ordinarily removed from the vehicle when it is not in use. (49CFR571.3)

Unloaded Vehicle Weight *(Canada) – the weight of a vehicle equipped with the containers for the fluids necessary for the operation of the vehicle filled to their maximum capacity, but without cargo or occupants. (poids du véhicule sans charge)*

Untrimmed Seat – the structure including the seat pedestal, seat track, seat base frame, seat back, recliner mechanism, seat padding, and all attaching hardware required for a functional seat assembly without the final trim material (e.g., cloth, leather, or vinyl) and trim material attaching components. (Ford Motor Company)

GENERAL INFORMATION

Information in this section is provided pursuant to Title 49, Code of Federal Regulations, Part 568 – "Vehicles Manufactured in Two or More Stages", and Section 6 of the Canadian Motor Vehicle Safety Regulations (CMVSR) – "Vehicles Manufactured in Stages." Part 568 specifies that final stage manufacturers must complete vehicles in compliance with all applicable Federal Motor Vehicle Safety Standards and affix a label to each incomplete vehicle that is completed in accordance with 49CFR567.5. Section 6.6 of the CMVSR provides labeling requirements for vehicles that are to be sold in Canada.

DIRECTIONS

STATEMENTS OF CONFORMITY

The "Statements of Conformity" section of this manual lists the Federal Motor Vehicle Safety Standards in effect on the date of manufacture of this incomplete vehicle that are applicable to the type(s) of completed vehicles into which this incomplete vehicle may be manufactured. This date is shown on the label affixed to the cover of this manual. These statements, in most cases, apply to specific types of incomplete or completed vehicles and identify GVWR and UVW weight ranges.

The incomplete vehicle type is identified by the 5th, 6th, and 7th digits of the Vehicle Identification Number (VIN). The completed vehicle types to which this incomplete vehicle may appropriately be completed is printed on the label, under the heading "May Be Completed As," that is affixed to the cover of this document. The Completed Vehicle Types chart on a following page identifies how various incomplete vehicles with an optional prep package or trim code may be completed.

Each statement of conformity is identified by a safety standard number located at the left margin. Because there may be multiple statements of conformity for each safety standard, use care to select the appropriate statement. Unique CMVSS requirements will be identified at the conclusion of the representations for a particular safety standard.

Compliance statements provided in this manual are of the three following types (49CFR568.4):

Type I • A statement that the vehicle, when completed, will conform to the standard if no alterations are made in identified components of the incomplete vehicle.

Type II • A statement of specific conditions of final manufacture under which the incomplete vehicle manufacturer specifies that the completed vehicle will conform to the standard.

Type III • A statement that conformity with the standard cannot be determined based upon the components supplied on the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation as to conformity with the standard.

IMPORTANT:

To rely on the compliance representations in this manual, the incomplete vehicles must be completed as one of the completed vehicle types designated on the label affixed to the cover of this manual, and must not exceed the specified GVWR, GAWRs, or the Unloaded Vehicle Weight limits when specified in this manual.

VEHICLE SPECIAL ORDER (VSO) VEHICLES

VSO vehicles can be identified by a six digit number with the letters VSO below the digits in the lower right area of the Incomplete Vehicle Information Label which is affixed to the driver-door lock pillar. See the sample labels on the next page.

The Statements of Conformity section of this manual includes compliance representations for certain VSO vehicles – these vehicles are identified in the Completed Vehicle Types chart. Other VSO vehicles may require additional Statements of Conformity, which would be included in a Supplement Section of this manual.

FORD TRUCK ASSISTANCE

Throughout this manual you will find references to information found in the *Ford Truck Body Builders Layout Book.* Additional design recommendations and specifications are also provided to assist subsequent stage manufacturers in completing incomplete vehicles. The *Ford Truck Body Builders Layout Book* may be accessed via the web at www.fleet.ford.com/truckbbas under the "Publications" tab.

The Ford Truck Body Builder Advisory Service may be consulted regarding information contained in this manual.

- Call (877) 840-4338
- E-mail via the web at www.fleet.ford.com/truckbbas under the "Contact Us" tab

INCOMPLETE VEHICLE MANUAL COVER

The cover of this manual depicts the incomplete vehicle configurations for which compliance representations are contained in this manual. Also, a label is affixed to the cover which includes the Vehicle Identification Number (VIN) for the specific vehicle to which this manual belongs. The label identifies the following information which pertains only to the vehicle with the corresponding VIN:

- GVWR
- Front and rear GAWRs
- Suitable tire and wheel size
- Cold tire inflation pressure (kPa/PSI)
- Completed vehicle type(s) into which the incomplete vehicle may be manufactured
- Optional prep package when the vehicle is so equipped

INCOMPLETE VEHICLE INFORMATION LABEL

All Medium truck incomplete vehicles manufactured by Ford Motor Company will have an Incomplete Vehicle Information Label affixed to the driver-door lock pillar. Samples of typical labels are shown below.

The 5th, 6th, and 7th positions of the Vehicle Identification Number (VIN) will identify the incomplete vehicle type. These three positions are used in the Completed Vehicle Types chart.

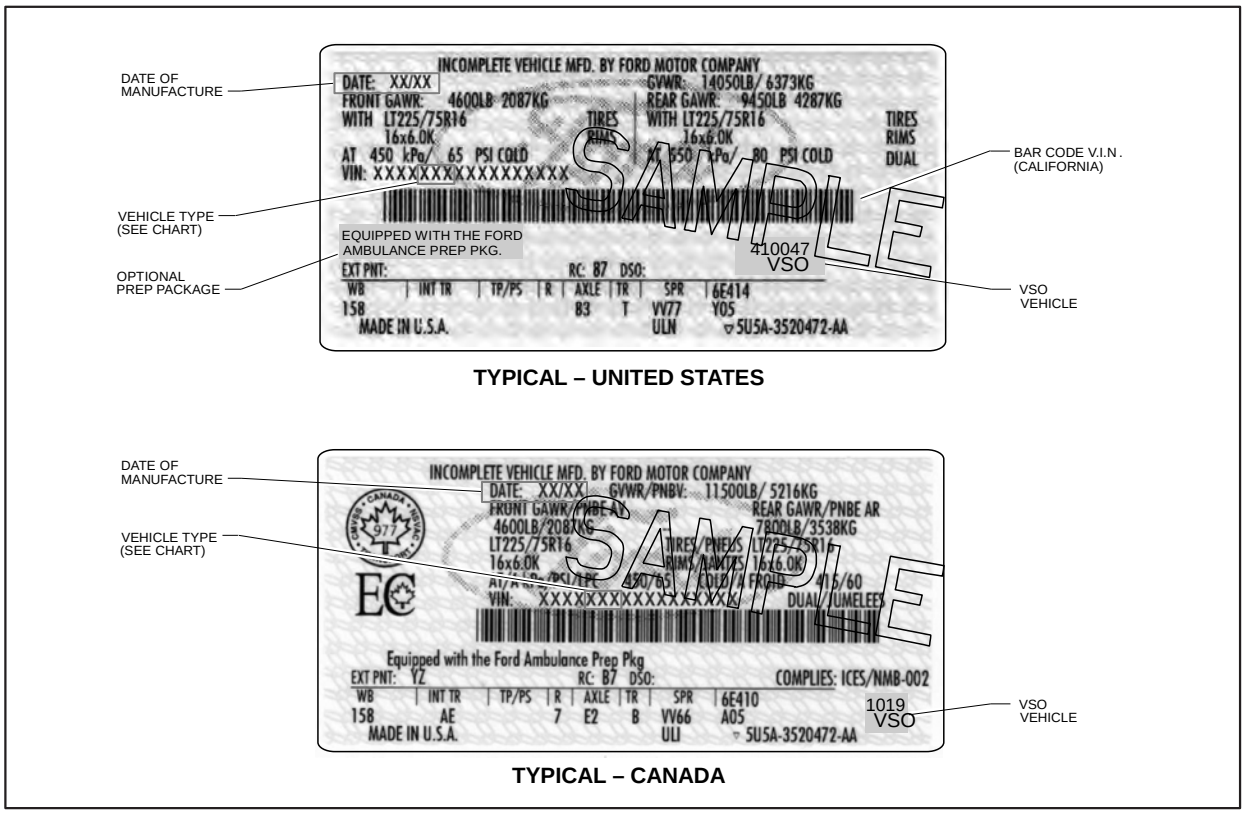
The California Air Resources Board (CARB) requires a Vehicle Identification Number (VIN) Label having a non-contact bar code reading wand capability. The bar code located directly below the VIN on the Incomplete Vehicle Information Label, when provided, will comply with this regulation.

The Canadian Motor Vehicle Safety Act and Regulations require installation of an Incomplete Vehicle Information Label with the National Safety mark on it on vehicles manufactured for sale in Canada. A sample of a typical label is shown below.

OPTIONAL PREP PACKAGES

Incomplete vehicles produced by Ford Motor Company, in some instances, are equipped with an optional prep package. Medium truck optional prep packages include the Ambulance Prep and Fire / Rescue Prep. The Completed Vehicle Types chart on the following page will identify incomplete vehicles and optional prep packages or trim codes that may be required by Ford Motor Company if final stage manufacturers wish to rely on the Statements of Conformity or, in some cases, preserve the Ford Motor Company new vehicle warranty.

If an incomplete vehicle is equipped with an optional prep package, both the Incomplete Vehicle Information Label affixed to the vehicle and the label on the front of this manual will identify the prep package.



INCOMPLETE VEHICLE INFORMATION LABELS

COMPLETED VEHICLE TYPES

5TH, 6TH, 7TH VIN DIGIT	INCOMPLETE VEHICLES	COMPLETED VEHICLES		
		TRUCK	TRUCK TRACTOR	MPV (AMBULANCE)
F-650 Series				
F6A, X6A, W6A	Straight Frame with Gasoline Engine	X		
F6D, X6D, W6D	Straight Frame with Diesel Engine	X,1		2
F6B, X6B, W6B	Proloader Frame with Gasoline Engine	X		
F6E, X6E, W6E	Proloader Frame with Diesel Engine	X,1		2
F6T, X6T, W6T	Diesel Truck Tractor		X	
F-750 Series				
F7A, X7A, W7A	Straight Frame with Gasoline Engine	X		
F7D, X7D, W7D	Straight Frame with Diesel Engine	X,1		2
F7T, X7T, W7T	Diesel Truck Tractor		X	

IMPORTANT:
Ford Motor Company makes no representation that the completed vehicle types listed above are the only vehicle types appropriate for the incomplete vehicles listed. However, if a unit is completed as a vehicle type other than as listed above, the Statements of Conformity may not be applicable.

(1) Fire / Rescue Prep Package
(2) Ambulance Prep Package

STATEMENTS OF CONFORMITY

The following Statements of Conformity apply to vehicles that are produced for sale or importation into the United States or Canada. The term “Incomplete Vehicle Types” in these statements refers to the types of the vehicles depicted on this manual’s cover and listed in the chart on the previous page.

The number preceding each Statement of Conformity refers to the number designation for a Part or a Section of Part 571 of the Federal Motor Vehicle Safety Standard.

The statements provided for each safety standard number are appropriate compliance representations for each Canadian safety standard number if this incomplete vehicle, identified by the VIN on the front of the document, was manufactured by Ford Motor Company for sale or use in Canada, except as may be noted at the conclusion of each safety standard number.

101 The statements below are applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 101, Controls and Displays if:

- The controls, displays, and their identifications supplied by Ford Motor Company are not removed, relocated, altered, or modified.
- The components, wiring, and power supply installed by Ford Motor Company to illuminate any control, display, or their identification are not removed or altered so as to affect lighting performance.
- Components added to the vehicle do not obstruct the driver’s ability to operate or visually locate the controls, displays, and their identifications.
- The driver-seat is not replaced, relocated, or modified other than for the addition of seat trim.

Any controls, displays, and illumination added to this vehicle must conform to the requirements of this Standard.

102 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 102, Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect, if no alterations or adjustments are made to the transmission, shift cable, transmission outer shift lever, shift cable bracket, vacuum tubes, vacuum pump system, brake-shift interlock system, starter interlock system, wiring circuit from the interlock switch to the power source, and transmission gear selector indicator (PRNDL).

If an auxiliary transmission is added to this vehicle, it must conform to the requirements of this Standard.

103 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 103, Windshield Defrosting and Defogging Systems, if no alterations or adjustments are made to heater and blower assemblies, ducting, operating controls, electrical circuit from the blower assembly to the power source, windshield, coolant hoses from the radiator or engine to the heater, and if no obstructions are added that restrict or otherwise redirect the air flow from the defroster outlets to the windshield.

104 The statement below is applicable to the Chassis Cab:

This vehicle when completed, will conform to Standard 104, Windshield Wiping and Washing Systems, if no alterations are made to the windshield, the windshield wiping and washing system, including the electrical circuit from the windshield wiping and washing motors to the power source, and if no obstructions are added that restrict or otherwise redirect fluid flow from the washer nozzles to the windshield.

105 The following statement is applicable to a Chassis Cab equipped with a hydraulic brake system:

The vehicle, when complete, will conform to Standard 105, Hydraulic and Electric Brake Systems, if:

- The center of gravity height to wheelbase ratio of the completed vehicle is 0.41 or less and the overall vehicle center of gravity height is not to exceed 68 inches for a truck or 54 inches for a non-school bus when loaded to a weight not exceeding GVWR distributed proportionally to the GAWR’s indicated on the cover of this manual.
- As a guide, the vertical center of gravity height of the incomplete vehicle, as sold by Ford Motor Company, may be assumed to be the distance from the ground to the top of the frame siderail measured at the longitudinal midpoint of the vehicle.
- For single rear axle models - determine the frame rail height of the unladen chassis-cab.
- The vehicle is equipped with the tires and wheel-rims installed on the vehicle as sold by Ford Motor Company.
- Modifications have not been made to the suspension or steering systems of the vehicle, as sold by Ford Motor Company, which could in any way adversely affect vehicle or related brake system performance.
- Additional axles have not been added to the vehicle as sold by Ford Motor Company and the GVWR and GAWR are identical to the incomplete vehicle ratings on the cover of this manual.
- Electrical or mechanical components and related wiring of the warning systems installed on the incomplete vehicle as sold by Ford Motor Company are not modified in any way.
- Other than as provided above, there have been no modifications, deletions, replacements, or alterations to any component or related hardware of the hydraulic brake system installed on the vehicle as sold by Ford Motor Company.

106 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 106, Brake Hoses, if the brake hose assemblies supplied by Ford Motor Company are not removed, relocated, altered, or modified and if no brake hose assemblies are added.

108 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 108, Lamps, Reflective Devices, and Associated Equipment, if all the required lighting equipment as indicated in Table 1 (identified by the codes R and S) is designed and installed in accordance with the requirements of Standard 108 and the directions contained in this compliance manual. Additionally, if the completed vehicle width is 2032 mm [80 in] or more, and/or the overall length is 9.14 meters [30 feet] or more, front and rear clearance lamps, and front and rear identification lamps, and/or intermediate side marker lamps, and reflex reflectors (not supplied by Ford Motor Company) are also required for compliance with Standard 108.

The items of equipment that are supplied by Ford Motor Company (identified by the code S in Table 1) are designed and installed to conform to all the applicable requirements of Standard 108. The completed vehicle, with these components installed, will conform to Standard 108 if the subsequent stage manufacturer does not remove, relocate, replace, or modify such equipment or modify the power supply or wiring to such equipment, and does not complete the body in such a configuration as to impair the conformity to the photometric and/or visibility requirements of the installed lamps and reflective devices.

Specific requirements for the fitment of lighting and associated equipment are listed by incomplete vehicle type in Table 1.

Lamps, reflective devices, and associated equipment necessary to complete the vehicle from an incomplete vehicle stage must conform to the equipment, location, activation, visibility, photometric and performance requirements of Standard 108 and to the applicable SAE standards or recommended practices referenced or sub-referenced in this Standard.

All electrical equipment added to the vehicle by subsequent manufacturers must conform to the wiring practices set forth in the Electrical Wiring Section of the appropriate *Ford Truck Body Builders' Layout Book*.

108 Canadian Requirements:

The preceding statements for Standard 108 are appropriate compliance representations for CMVSS 108, Lighting System and Retroreflective Devices, if this vehicle is manufactured for sale or use in Canada.

TABLE 1

Standard 108 Lighting Equipment For Chassis Cab Vehicles

Item		Completed as Truck Width 2032 mm [80 in] or More	Completed as Truck Tractor Width 2032 mm [80 in] or More
Headlamps with Hi/Lo beam switching (1)		S	S
Daytime Running Lamps (when provided)		N/S (2)	N/S (2)
Tail Lamps		S (3)	S
Stop Lamps		S (3)	S
License Plate Lamps		S (3)	S
Reflex Reflectors	– Side Front	S	S
	– Side Intermediate	R (4)	R
	– Side Rear	R	N
	– Rear	S	S
Side Marker Lamps	– Front	S	S
	– Side Intermediate	R (4)	R
	– Rear	R	N
Back-Up Lamps		S (3)	S
Turn Signal Lamps	– Front	S	S
	– Rear	S (3)	S
Turn Signal Operating Unit		S	S
Turn Signal Flasher (5)		S	S
Vehicular Hazard Warning Signal Operating Unit		S	S
Vehicular Hazard Warning Signal Flasher		S	S
Identification Lamps	– Front	S (3)	S (3)
	– Rear	R	N
Clearance Lamps	– Front	S (3)	S (3)
	– Rear	R	N
Retroreflective Material Conspicuity System	– Back of Cab or Sleeper	N	S (6)
	– Rear mud flaps	N	S

S Required on completed vehicle and supplied with the incomplete vehicle.

R Required on completed vehicle and not supplied with the incomplete vehicle.

N Not required for completed vehicle.

(1) Due to variations in finished vehicle attitude, headlights should be aimed after all modifications are completed.

(2) Required on Canadian vehicles; optional on U.S. vehicles.

(3) Lamps not supplied if vehicle is ordered with a delete lamps option.

(4) Required only if vehicle is over 30 feet long.

(5) Turn signal flasher function is contained within the Body Control Module features. All chassis cab vehicles are configured to provide the function of a variable-load turn signal flasher. Turn signal lamp failure indication is not supplied with the incomplete vehicle and will be required if the completed vehicle does not meet the exemption criteria in S9.3.6 of FMVSS 108.

(6) Retroreflective material for installation is supplied for Truck Tractors ordered without mud flaps.

111 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 111, Rear Visibility, if:

- The mirrors and their mounts as supplied by Ford Motor Company are not removed, relocated, replaced, or altered except as noted below.
- No structural modifications are made to the body which would affect the stability of the mirror mounts.
- Any modifications or additions made to the incomplete vehicle must not adversely affect the driver's view to the rear in the outside mirrors along both sides of the vehicle.
- The driver's seat is not replaced, relocated or modified.

113 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 113, Hood Latch Systems, if the hood latch system as provided by Ford Motor Company is not removed or altered.

115 Canadian Requirements:

The statements for Part 565.13 are appropriate compliance representations for CMVSS 115, Vehicle Identification Number, if this incomplete vehicle was manufactured for sale or use in Canada.

116 The statement below is applicable to the Chassis Cab with a hydraulic brake system:

This vehicle, when completed, will conform to Standard 116, Motor Vehicle Brake Fluids, provided any brake fluid added or replaced conforms to the DOT 5.1 specifications of the Standard and contaminants are not introduced into the hydraulic brake system.

119 The statement below is applicable to the Chassis Cab:

All tires supplied by Ford Motor Company are in full conformity with Standard 119, New Pneumatic Tires for Motor Vehicles with a GVWR of More Than 4536 Kilograms (10,000 Pounds) and Motorcycles.

If additional tires are installed or the existing tires are replaced by subsequent stage manufacturers, they must conform to the requirements of Standard 119.

120 The statements below are applicable to the Chassis Cab:

This vehicle, when completed, will conform to the tire and rim selection requirements of Standard 120, Tire Selection and Rims and Motor Home / Recreation Vehicle Trailer Load Carrying Capacity Information for Motor Vehicles with a GVWR of More Than 4536 Kilograms (10,000 Pounds), if:

- The tire and rim assemblies are not removed, altered, or replaced.
- The Incomplete Vehicle Information Label that is either provided with the incomplete vehicle or affixed to the vehicle is not removed.

The final stage manufacturer must affix a Certification (Compliance) label to the completed vehicle indicating tire size, rim size, cold inflation pressure, and the gross axle weight ratings. This information is provided on the label that is affixed to the cover of this Incomplete Vehicle Manual (IVM).

121 Exemptions – Standard 121, Air Brake Systems

The following statements concerning Standard 121, Air Brake Systems, do not apply to:

- Any vehicle equipped with an axle that has a GAWR of 29,000 pounds or more.
- Any truck or bus that has a speed attainable in 2 miles of not more than 33 mph.
- Any truck that has a speed attainable in 2 miles of not more than 45 mph, an unloaded vehicle weight that is not less than 95% of its GVWR, and no capacity to carry occupants other than the driver and operating crew.

121 The statements below are applicable to the Chassis Cab when equipped with an air brake system:

This vehicle, when completed, will conform to Standard 121, Air Brake Systems, if:

- The center of gravity height to wheelbase ratio of the completed vehicle is less than or equal to 0.41 for front axles less than or equal to 12,000 pounds; or less than or equal to 0.45 for front axles greater than 12,000 pounds; and the overall vehicle center of gravity height does not exceed 54 inches for a bus, 68 inches for single rear axle truck, and 75 inches for trucks with more than one rear axle when loaded to a weight not exceeding GVWR* distributed proportionally to GAWR's*. The vertical center of gravity height of the incomplete vehicle, as sold by Ford Motor Company, may be assumed to be the distance from the ground to the top of the frame siderail measured at the longitudinal midpoint of the vehicle.
- The vehicle is equipped with the tires and wheel-rims provided on the vehicle by Ford Motor Company.
- There have been no modifications to the engine, air compressor, or engine/compressor drive system, as provided by Ford Motor Company, which affect the maximum governed engine speed (RPM) or related air compressor performance at engine maximum governed speed (RPM).
- No connections are made into –
  1) the air line tubing or fittings for the parking brake system
  2) the rear axle emergency system (modulated spring brake system)
  3) the air supply and signal lines to the rear chassis relay valve(s), or
  4) the air delivery lines to the front axle brakes and quick release valve.
- No connections are made between the check valve and the reservoir port for air supply.
- Additional reservoir(s) added to the vehicles, as sold by Ford Motor Company, are equipped with manually operated drain valve(s) for each air reservoir added.
- For reservoir volume added to the air system, the compressor build-up time from 85 psi to 100 psi at the engine's maximum recommended RPM shall be less than S where:

$$S = \frac{Vm + Va}{Vr} \times 25$$

S = Time in seconds
Vm = Reservoir volume for vehicle as received from Ford Motor Company
Va = Accessory reservoir volume
Vr = Reservoir volume required to meet Standard 121 = total air brake chamber rated volume X 12

121 *(Continued next page)*

121 *(Continued)*

- Each added reservoir shall be capable of withstanding an internal hydrostatic pressure of five times the compressor cutout pressure or 500 psi, whichever is greater, for 10 minutes.
- Modifications have not been made to the suspension or steering systems of the vehicle, as sold by Ford Motor Company, which could, in any way, adversely affect vehicle or related brake system performance.
- Electrical or mechanical components and related wiring of the pressure warning system, provided by Ford Motor Company on the incomplete vehicle, have not been modified in any way.
- Additional axles have not been added to the vehicle as sold by Ford Motor Company and the GVWR and GAWR are identical to the incomplete vehicle ratings on the cover of this manual.
- Other than as provided above, there have been no modifications, deletions, replacement, or alterations to any component or related hardware of the air brake system provided on the vehicle by Ford Motor Company.

124 The statements below are applicable to all incomplete vehicle types:

This vehicle, when completed, will conform to Standard 124, Accelerator Control Systems, if:

- No alterations are made to the accelerator pedal, Electronic Throttle Body, mounting hardware, adjustable pedal mechanism, or other components of the accelerator control system as installed by Ford Motor Company.
- No equipment is added nor existing equipment modified which would restrict operation of the accelerator control system.
- No alterations are made to the Pedal Position Sensor or Electronic Throttle Body Sensor and all associated hardware and wiring.

205 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 205, Glazing Materials, if no alterations to or replacements of the installed glazing materials are made and if additional glazing materials installed by a subsequent stage manufacturer conforms to the requirements of Standard 205.

207 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 207, Seating Systems, if no alterations are made to the seat assemblies, their anchorages, the floor pan, floor pan reinforcements, or the cab rear sill. Any seating system added to this vehicle must conform to applicable requirements of this Standard.

208 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 208, Occupant Crash Protection, if no deletions or replacements are made to the seat belts, and attaching hardware, and if no action by subsequent manufacturers is taken which would impair the integrity of the seat belt system.

209 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 209, Seat Belt Assemblies, if no alterations or replacements are made to the seat belt assemblies, and attaching hardware, and if no action by subsequent manufacturers is taken which would impair the integrity of the seat belt system provided and if no additional belt assemblies are added to the vehicle.

210 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Standard 210, Seat Belt Assembly Anchorages, if no alterations are made to the seat belt anchorages, seat belt assemblies, floor pan, floor pan reinforcements, and rear cab sill, and if no seat belt assemblies, lap belt anchorages, or shoulder belt anchorages are added.

213 The statement below is applicable to the Chassis Cab:

Conformity with Standard 213, Child Restraint Systems, cannot be determined based upon the components supplied on the incomplete vehicle; accordingly Ford Motor Company makes no representation as to conformity with this Standard. Any child restraint system that is added or incorporated into the design of a designated seating position must conform to the requirements of this Standard.

217 The statement below is applicable to the Chassis Cab:

Conformity with Standard 217, Bus Emergency Exits and Window Retention and Release, cannot be determined based upon the components supplied on this incomplete vehicle; accordingly Ford Motor Company makes no representation as to conformity with this Standard.

301.1 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with CMVSS Standard 301.1, LPG Fuel System Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

301.2 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with CMVSS Standard 301.2, CNG Fuel System Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

302 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform with Standard 302, Flammability of Interior Materials, if no alterations are made to those components covered by the Standard which are installed by Ford Motor Company and all components covered by Standard 302, which are added to the incomplete vehicle by subsequent stage manufacturers meet the flammability requirements of the Standard.

304 U.S. Requirements:

The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with Standard 304, Compressed Natural Gas Fuel Container Integrity. Ford Motor Company makes no representation as to conformity with this Standard.

403 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with Standard 403, Platform Lift Systems for Motor Vehicles. Ford Motor Company makes no representation as to conformity with this Standard.

404 The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with Standard 404, Platform Lift Installations in Motor Vehicles. Ford Motor Company makes no representation as to conformity with this Standard.

Part 393.67 Parts and Accessories Necessary for Safe Operation – Liquid Fuel Tanks

The fuel tank provided on the Chassis Cab will conform to Part 393.67, Parts and Accessories Necessary for Safe Operation – Liquid Fuel Tanks, if the fuel tank as provided by Ford Motor Company is not altered on the completed vehicle.

Part 565 U.S. Requirements:

This vehicle, when completed, will conform to Part 565, Vehicle Identification Number (VIN) Requirements, if the vehicle identification number printed on the label affixed to the cover of this manual is mounted and displayed in accordance with the requirements of this Standard.

Part 565.13 The statement below is applicable to the Chassis Cab:

This vehicle, when completed, will conform to Part 565.13, General Requirements, if the Vehicle Identification Number (VIN) tag mounted on the cowl top and visible through a clearance hole in the windshield blackout is not removed, altered, nor modified and no actions are taken by the subsequent stage manufacturer that would obstruct the readability of the Vehicle Identification Number tag mounted on the cowl top.

Part 567 / CMVSR Section 6.6

The statement below is applicable to the Chassis Cab:

This incomplete vehicle does not comply with the intermediate and final stage manufacturer requirements of Part 567 - Certification, nor the Canadian Motor Vehicle Safety Regulations, Section 6.6 – Final-stage Manufacturer's Compliance Label. It is the responsibility of the intermediate and final stage manufacturers to provide additional labeling to meet these requirements. Ford Motor Company makes no representation as to conformity.

1106 Canadian Requirements:

The statements below are applicable to the Chassis Cab:

These vehicles, when completed, will conform to Standard 1106, Noise Emissions, Section 4, if noise control devices or elements of design are not modified, removed, or rendered inoperative. Examples of such devices or elements of design are:

- Fender apron absorbers, fender apron barriers, underbody noise shields and acoustic absorption material.
- Engine speed governor or electronic control intended to control maximum engine speed.
- Engine air duct, air intake choke or silencer, air cleaner and air cleaner element.
- Exhaust system components including the catalyst inlet pipe, muffler, outlet pipe, resonator and diffuser.
- Engine cooling fan and cooling fan clutch.

CANADIAN VEHICLES

(Vehicles to be completed for sale or use in Canada)

VEHICLE IDENTIFICATION

Refer to the “Vehicle Description” section of this manual for additional information. Incomplete vehicles produced by Ford Motor Company require, for certain applications, optional Prep Packages or trim codes which are listed on the Completed Vehicle Types charts.

DAYTIME RUNNING LAMP (DRL)

Compliance representations for CMVSS 108, Lighting System and Retroreflective Devices, are in the “Statements of Conformity” section of this manual.

CANADIAN RADIO FREQUENCY INTERFERENCE (RFI) INFORMATION

All vehicles powered by spark ignition engines (e.g.: gasoline, natural gas, or propane engines) and manufactured in Canada or for sale or use in Canada are subject to the Canadian “Regulations for the Control of Interference to Radio Reception” per Interference-Causing Equipment Standard (ICES-002) and applicable test method according to “CAN/CSA-C108.4-M06”. Violation of these regulations is punishable by fine or imprisonment. This Ford-built incomplete vehicle was designed and manufactured to be capable of meeting the regulatory requirements or such modifications thereof as may have been authorized by the Department of Communications. However, because Ford Motor Company has no control over how this incomplete vehicle is completed by subsequent stage manufacturers, Ford Motor Company does not represent that the completed vehicle incorporating the Ford-built components will comply with applicable requirements.

The following information is supplied to subsequent stage manufacturers to help them avoid increasing the RFI emissions of this vehicle in the course of completing it.

For any completed vehicle, additional measures may be needed to adequately suppress RFI emissions. Affected components could include spark plugs, ignition wires, ignition coils, ground straps, ignition component shields, accessory drive belts, instrument voltage regulator suppressor assembly, and ignition coil suppressor assembly.

More specifically:

- All components required to suppress RFI emissions, which are removed during service, repair, or completion of the vehicle, must be reinstalled in the manner in which they were installed by Ford Motor Company.
- Shields on ignition coils must remain installed.
- Replacement spark plugs, ignition wires, and ignition coils must be equivalent in their RFI suppression properties to original equipment.
- Electrical grounds on all components must be retained.
- Metallic components installed on the body or chassis must be grounded to the chassis.
- Electrical circuits added to the vehicle must not be installed near the high voltage ignition components.
- Only “static conductive” accessory drive belts should be used. Fan, water pump, power steering, and other belts should be of the OEM type or equivalent that will not build up a static electrical charge.
- Engine compartment wiring must not be rerouted in any manner.
- The Powertrain Control Module (PCM) must not be relocated from the position as installed by Ford Motor Company.

Additional guidance for installing two-way mobile radios can be found via the web at www.fordemc.com/docs/download/Mobile_Radio_Guide.pdf.

EMISSION CERTIFICATION INFORMATION

CAUTION:

U.S.:

Vehicles are emission certified for registration in specific areas of the United States. For example, **vehicles certified and labeled for sale in California can not be sold in the states that require Federally certified vehicles and vehicles certified to Federal standards can not be sold in states that require California certified vehicles.** It is the subsequent stage manufacturer's responsibility to purchase a vehicle certified for the state/area in which the vehicle will be sold. EPA has stated that under certain circumstances they will not enforce these requirements. For further guidance consult EPA's "policy on cross border sales of California vehicles."

CANADA:

If the completed vehicle is intended for sale or use in Canada, the intermediate or final stage manufacturer must insure that the incomplete vehicle is ordered through a Canadian dealer or is ordered from Ford Motor Company with the appropriate Canadian market option code. Failure to do so may result in an incomplete vehicle that is built with an emissions system and labeling that are not in compliance with the requirements of the Canadian Environmental Protection Act.

IMPORTANT:

If the vehicle is modified such that it will not comply with applicable emission standards throughout its useful life, the body builder, installer, or subsequent stage manufacturer will be considered a manufacturer for purposes of complying with U.S. Federal, California, or Canadian exhaust and evaporative emission requirements, and Federal fuel economy standards, labeling, and certain other requirements.

IMPORTANT:

For purposes of Government Regulation, a body builder, installer, or any subsequent manufacturer may be considered a manufacturer.

VEHICLE EMISSION CONTROL INFORMATION LABEL

To meet United States Environmental Protection Agency regulations, the Vehicle Emission Control Information (VECI) label must be affixed in the engine compartment in a location that is readily visible after installation and in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment that is easily detached from the vehicle.

When the VECI label is supplied, but not attached to the vehicle, it must be permanently mounted in a readily visible location to meet the preceding requirements. In addition, whether the label is already affixed or to be affixed, no components shall be installed which visibly obscure the label in any way that fails to satisfy the visibility requirements described in the California Emission Control Label Specifications.

For Canadian requirements, consult On-Road Vehicle and Engine Emission Regulations (SOR).

EXHAUST EMISSIONS

All Heavy Duty engines (for Canada and all U.S. States except California, a Heavy Duty engine is an engine used to propel a vehicle exceeding 8500 pounds GVWR or 6000 pounds curb weight, or that exceeds 45 square feet of frontal area, for California a Heavy Duty engine is an engine used to propel a vehicle in excess of 6000 pounds GVWR) have been certified to the applicable Federal and California exhaust emissions and evaporative emissions requirements for Heavy Duty engines. Additional emissions certification information is contained in the Ford Body Builders Layout Book for the model year and type of this incomplete vehicle. The label affixed to the cover of this manual states the maximum GVWR and GAWR's to which the vehicle may be completed. It is the responsibility of the subsequent manufacturer to assure that the completed vehicle is consistent with the weight class for which the engine was certified.

Body builders, installers, or any other subsequent stage manufacturer may not delete or make modifications that disable the engine emission control hardware furnished with incomplete vehicles. Any instructions pertaining to incorporation of such hardware into the completed vehicle's electrical or mechanical systems should be strictly followed.

If the body builder, installer, or subsequent stage manufacturer adds additional weight to the vehicle, beyond Ford's GVWR, or makes any modification, revision, or removal of a component included in the emissions certification application that applies to that engine or vehicle, or otherwise alters the effectiveness of the exhaust emissions control system, permission must be obtained from the United States Environmental Protection Agency by the body builder, installer, or subsequent manufacturer making such modification, revision, or removal prior to distribution, sale, offering for sale, introduction, or delivery for introduction of the subject vehicle into U.S. Commerce. In Canada, this same requirement applies, and permission must be obtained from Environment Canada. Additionally, any body builder, installer, or subsequent stage manufacturer making such addition, modification, revision, removal, or alteration must obtain approval from the California Air Resources Board (CARB) if the new vehicle will be delivered for sale or use in the State of California.

HIGH ALTITUDE REQUIREMENTS

United States Environmental Protection Agency regulations do not contain unique emission certification requirements for trucks that will be sold or delivered to customers for principal use above 1,219 m [4,000 ft].

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EMISSION CONTROL HARDWARE

Any body builder, installer, or subsequent stage manufacturer must also assure that all emission control hardware furnished with incomplete vehicles is on the vehicle and is operational and that applicable instructions for incorporating such hardware into the completed vehicle's electrical or mechanical systems are strictly followed.

Further, to avoid any question of certification coverage, approval of any modification or use of an engine or vehicle which may alter or render inoperative any of the emission control components must be obtained from the United States Environmental Protection Agency by the manufacturer making such modification or use prior to distribution, sale, offering for sale, introduction, or delivery for introduction of the subject vehicle into U.S. commerce. Additionally, the manufacturer making such modification or use must obtain approval from the California Air Resources Board if the new vehicle will be delivered for sale or use in the State of California.

UNLEADED GASOLINE LABEL

Regulations no longer require the manufacturer to affix permanent labels reading "Unleaded Gasoline Only" or "Unleaded Fuel Only" to vehicles destined for sale in the United States or Canada. Such labels may however be required for vehicles sold into other markets. It is the responsibility of the body builder, installer, or any subsequent manufacturer to properly label vehicles for the market in which they are sold.

EXTERIOR NOISE

New vehicles which have a gross vehicle weight rating in excess of 4536 kg [10,000 lb], include a partially or wholly enclosed operator's compartment, and are manufactured for use in the United States, must comply with U.S. Environmental Protection Agency's exterior noise emission regulations for medium and heavy trucks (40 CFR Part 205, Subpart B) which establish a noise emission limit of 80 dB (A).

TAMPERING WITH NOISE CONTROLS

Federal law prohibits the removal or rendering inoperative by any person, other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into such vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use. Federal Law also prohibits the use of such vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the acts listed below:

- Removal of fender apron absorbers, fender apron barriers, underbody noise shields, or acoustical absorptive material.
- Modification of engine speed control so as to allow engine speed to exceed manufacturer's specifications.
- Removal or modification of air duct, air intake choke or silencer, air cleaner, or air cleaner element.
- Removal of, or rendering inoperative, exhaust system components including the catalyst inlet pipe, muffler, outlet pipe, resonator, or diffuser.
- Removal of the fan shroud. Removal of or rendering inoperative the fan clutch.

New vehicles manufactured for sale in Canada must comply with applicable provisions of Canada Motor Vehicle Safety Standard 1106, Noise Emissions.

Additional noise emissions information is contained in the *Ford Truck Body Builders Layout Book*.

WARRANTY AND MAINTENANCE

A copy of the appropriate Ford truck *Owner's Manual* and *Warranty Guide* must be installed in every vehicle prior to sale to the ultimate purchaser in order to provide emission systems warranty information and maintenance schedules. It also provides, where required by EPA noise control regulations for vehicles having GVWR over 4536 kg [10,000 lb], noise emissions warranty information, instructions for maintenance, use, and repair of vehicle noise emission control systems, a maintenance record format, and list of prohibited tampering acts.

EVAPORATIVE EMISSIONS

All Federal light and heavy duty trucks and all California vehicles with gasoline engines are required to comply with evaporative emissions requirements established by the Environmental Protection Agency or the California Air Resources Board. Production fuel systems supplied on incomplete trucks manufactured by Ford Motor Company comply with these requirements. **If the subsequent stage manufacturer adds to or modifies the air intake system or fuel system in any manner, it becomes the responsibility of the modifier to assure compliance with the applicable regulations.** Refer to the Design Recommendation section of the *Ford Truck Body Builders Layout Book* for additional Fuel System Evaporative Emissions information.

MALFUNCTION INDICATOR LIGHT (MIL)

The "Malfunction Indicator Light" is used to indicate malfunctions of the engine's emission control system and certain powertrain emissions-related components. For all Medium truck incomplete vehicles, the MIL is Ford-installed and operational in the instrument panel.

The MIL must be located on the driver's-side instrument panel, be of sufficient illumination and location to be readily visible under all lighting conditions and shall be amber in color when illuminated. The MIL, when illuminated, shall display the phrase "Check Engine" or "Service Engine Soon". The word "Powertrain" may be substituted for "Engine" in the previous phrases. Alternatively, the ISO engine symbol may be substituted for the word "Engine" or for the entire phrase. This is a requirement for emission certification.

OZONE DEPLETING SUBSTANCE (ODS)

The Clean Air Act of 1990, Section 611 requires any product (i.e., completed vehicle) containing or manufactured with any Class I Ozone Depleting Substance on, or after May 15,1993 must be identified with a "clearly and conspicuously attached label."

Ford Motor Company has eliminated Class I ODS from its manufacturing processes. All Ford Truck incomplete vehicles will not have Class I ODS content.

Manufacturers, including subsequent stage manufacturers, are required to label their products if the product, including any component (whether manufactured by that manufacturer or not), contains a Class I ODS or if the manufacturer used a Class I ODS in the manufacturing of the product. In the case where Ford Motor Company provides a label saying the incomplete vehicle contains a Class I ODS that information must be placed on the product warning label. (See EPA regulation on wording, placement, size, and combining labels.) In Canada consult the appropriate Provincial or Territorial Ministry of Environment.

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CALIFORNIA FUEL VAPOR RECOVERY

California regulations require that the vehicle fuel systems be designed to accommodate a vapor recovery fueling nozzle including unobstructed access to the fill pipe. Fuel filler pipes as installed by Ford Motor Company will comply with the "Specifications For Fill Pipes and Openings of Motor Vehicle Fuel Tanks" referenced in Title 13 California Administrative Code provided no part of the aftermarket body, as installed, intrudes within a 254 mm [10 in] radius cylinder centered on the fuel filler port, with its axis parallel to the ground, starting at the outer-most surface of the Ford supplied fuel filler housing and projecting outward away from the body.

CALIFORNIA MOTOR VEHICLE EMISSION CONTROL LABEL

To meet California emission certification regulations, the Vehicle Emission Control Information (VECI) label must be welded, riveted, or otherwise permanently attached to an area within the engine compartment or to the engine in such a way that it will be readily visible to the average person after installation of the engine in a vehicle. In selecting an acceptable location, the manufacturer shall consider the possibility of accidental damage (e.g., possibility of tools or sharp instruments coming in contact with the label). The label shall be affixed in such a manner that it cannot be removed without being destroyed or defaced, and shall not be affixed to any part which is likely to be replaced during the vehicle's useful life. As used in these specifications, readily visible to the average person shall mean that the label shall be readable from a distance of 460 mm [18 in] without any obstructions from vehicle or engine parts (including all manufacturer available optional equipment), except for flexible parts, (e.g., vacuum hoses, ignition wires). Alternately, information required by these specifications to be printed on the label shall be no smaller than 8 point type size provided that no vehicle or engine parts (including all manufacturer available optional equipment), except for flexible parts that can be moved out of the way without disconnection, obstruct the label.

Completed vehicles for retail sale in California require a machine-readable Vehicle Identification Number (VIN) bar-code label made of paper, plastic, metal, or other permanent material which shall be affixed in a readily visible location to either the door-latch post next to the driver's seating position, the door edge that meets this door-latch post, or above the instrument panel in a location clearly visible through the lower left corner of the windshield. All incomplete vehicles will conform to this standard.

For the VECI and VIN labels, sufficient clearance shall be provided to use a non-contact bar-code Reading Wand. For the VECI label, the label and any adhesives used shall be designed to withstand typical vehicle environment conditions in the area where the label is attached for the vehicle's total expected life. Typical vehicle environmental conditions shall include, but are not limited to, exposure to engine lubricants and coolants (e.g., gasoline, motor oil, brake fluids, water, ethylene glycol), under hood temperatures, steam cleaning, and paints or paint solvents.

RADIO FREQUENCY INTERFERENCE (RFI)

The ignition system on your vehicle (if other than a Basic (Stripped) Chassis) has been designed to be capable of compliance with RFI requirements established by the Canadian government. However, because Ford Motor Company has no control over how an incomplete vehicle is completed by subsequent stage manufacturers, Ford Motor Company does not represent that the completed vehicle incorporating the Ford-built components will comply with those requirements. Any ignition system component (i.e.: spark plugs, ignition wiring, coil suppressor assembly, etc.) that is replaced should be replaced by the same Ford Motor Company part number or equivalent to maintain RFI suppression.

While there are currently no RFI regulations in the United States specifically applicable to automotive ignition systems, all Ford Motor Company trucks built with an ignition system use the same or equivalent components to those supplied on Canadian vehicles.

Ford Motor Company recommends that all ignition system service be performed at a Ford authorized service facility to help hold RFI emissions levels to a minimum.

Additional RFI information is contained in the "Canadian Vehicles" section of this manual.

Devices that emit radio frequency (RF) energy such as AM/FM radios, mobile telecommunications systems (two-way radios, telephones), and radio controlled security systems are subject to the rules and regulations of the Federal Communications Communication (FCC), including 47 CFR Parts 2 and 15. Any such system installed in a vehicle should comply with those rules and should be installed only by a qualified technician. In addition, to ensure continued compliance with the FCC's regulations, RF devices must not be modified or changed in a manner not expressly approved by Ford Motor Company Mobile Communication Systems. RF devices particularly, if not properly installed, may adversely affect the operation of the vehicle. For example, such systems when operated may cause the engine to stumble or stall. In addition, such systems themselves may be damaged or their operation affected by the operation of the vehicle. (Citizens Band [CB] transceivers, garage door openers, and other transmitters whose power output is 5 watts or less, ordinarily will NOT affect vehicle operation.)

Because Ford Motor Company has no control over the operation or manufacture of such systems or their installation, Ford Motor Company cannot assume responsibility for any adverse effects or damage if this equipment is used.

Additional guidance for installing two-way mobile radios can be found via the web at www.fordemc.com/docs/download/Mobile_Radio_Guide.pdf.

FORD TRUCK BODY BUILDERS LAYOUT BOOK

Throughout this manual you will find references to information found in the Ford Truck Body Builders Layout Book. Additional Design Recommendations and specifications are also provided to assist subsequent stage manufacturers in completing chassis cab and incomplete vehicles. The Ford Truck Body Builders Layout Book can be accessed via the web at www.fleet.ford.com/truckbbas under the "Publications" tab.

FORD SERVICE PUBLICATIONS

Many Ford Service Publications pertain to specific Model Year and vehicle types. Ford Service Publications are available by subscription via the web at www.motorcraft.com. The following publications are a few of many manuals which are available from Helm Incorporated; call: 1-800-782-4356

- Ford Truck Shop Manuals
- Ford Towing Manual
- Ford Electrical & Vacuum Trouble Shooting Manual
- Ford Wiring Diagram

FORD TRUCK BODY BUILDER ADVISORY SERVICE The Ford Truck Body Builder Advisory Service may be consulted regarding information contained in this manual. Call toll free 877-840-4338 or e-mail via the web at www.fleet.ford.com/truckbbas under the "Contact Us" tab.

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